

Comparative analysis of the diagnosis and treatment of vertigo in elderly emergency department patients

Jeffrey Truong MPH, David Burkard MD, Matthew Singh MD, Thomas Peterson MD, Jennifer Bach DO, Nate Ladaga DO, Angela Zamarripa MD

Michigan State University College of Human Medicine, Department of Emergency Medicine; Corewell Hospital, Grand Rapids



BACKGROUND

- Benign paroxysmal positional vertigo (BPPV) is the most frequent form of vestibular dysfunction in elderly emergency department (ED) patients.
- BPPV affects a significant portion of younger adults as well.
- The Dix-Hallpike test—the standard for BPPV diagnosis—is not common in the ED setting.
- If no central origin of the vertigo is determined, patients in the ED are typically treated with benzodiazepine, antihistamine, or anticholinergic agents.
- Studies have shown that these pharmaceutical treatment options may not be the best for elderly patients with BPPV.
- The aim of this study is to analyze ED provider habits in the diagnosis and treatment of vertigo among elderly patients.

METHODS

- This was a retrospective cohort analysis of consecutive adult patients with an ED diagnosis of BPPV.
- Patients were seen at seven emergency departments (EDs) over a 6-month study period (October 2018 – April 2019).
- Affiliated institutions included three rural medical centers, three university-affiliated hospitals and a children’s tertiary care facility.
- Data collected included demographics, clinical features, diagnostic testing, imaging, and ED treatment in two age groups (< 65 years versus > 65 years).
- Chi-squared and t-tests were used to compare the age groups across key demographic and outcome variables.
- A random sample of 10% of the charts were reviewed to determine inter-rater reliability.

RESULTS

- A total of 329 adult ED patients met the inclusion criteria; 126 (38%) were over 65 years of age and 203 (62%) were younger.
- The mean duration of vertiginous symptoms in both groups were similar (41.1 ± 75.6 hours).
- More elderly patients had a computed tomography (CT) of the head ordered compared to the younger group (62% vs 24%, $p < 0.001$).
- Only 13% of both age groups (43/329) had a Dix-Hallpike test performed in the ED.
- Pharmaceutical treatment was given to 93% of all BPPV patients in the ED (Table).
- Canalith repositioning maneuvers were used in 4% of patients, regardless of age.
- Elderly patients were more likely to be admitted (25% vs 10%, $p < 0.001$) or referred to a neurology clinic for follow-up (6% vs 1%, $p = 0.009$).
- 21 (8.4%) returned to the ED within 20 days for the same complaint
- Reliability of data collection ($k = 0.88$) showed excellent agreement.

Table. Pharmaceutical treatment which was given to BPPV patients in the ED

	< 65 years (N= 203)	≥ 65 years (N=126)
Meclizine	174 (86.0%)	101 (80.2%)
Scopolamine	58 (28.6%)	6 (4.8%)
Ondansetron	53 (26.1%)	31 (24.6%)
Benzodiazepines	52 (25.6%)	29 (23.0%)
Benadryl	11 (5.4%)	6 (4.8%)
Steroids	8 (3.9%)	5 (4.0%)

CONCLUSIONS

- Omission of a simple clinical test, the Dix-Hallpike, can result in patients undergoing unnecessary, expensive investigations regardless of age.
- Although ED providers commonly prescribe drug therapy for vertiginous symptoms, many of these older patients could be successfully treated with canalith repositioning maneuvers.